

**VICTORVILLE 2 HYBRID POWER PROJECT (07-AFC-01)**  
**CEC STAFF DATA REQUEST NUMBERS 55 -56**

**Technical Area: Hazardous Materials**

**Response Date: July 23, 2007**

**Data Request 55:**

Please add to Table 6.7-3 of the AFC the chemical name, CAS number, toxicity, Permissible Exposure Limit, Storage Description, and Storage Practices for the following materials:

- a. neutralizing amine (250 gallons)
- b. oxygen scavenger (250 gallons)
- c. any other hazardous material that would be used during operations of the power plant and not listed on this table.

**Response:**

The boiler water treatment chemicals have not yet been selected for the VV2 Project, so the boiler treatment chemicals were grouped in Table 6.7-3 of the AFC as "Boiler Water Treatment Chemicals". There are a number of suitable chemical suppliers, each with its own proprietary formulation for oxygen scavengers and neutralizing amines. Each proprietary formulation has one or more active ingredients, and any number of additional ingredients, some of which may not be disclosed on the available literature (e.g., technical data sheets or material safety data sheets). Table DR55-1 provides the results of a literature search to identify the most common active ingredients used by chemical suppliers for oxygen scavengers and neutralizing amines. The requested information, including chemical name, CAS number, toxicity, Permissible Exposure Limit, Storage Description, and Storage Practices is provided in Table DR55-1 for each of these common ingredients.

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**Table DR55-1 (revised material for AFC Table 6.7-3)**  
**Summary of Special Handling Precautions for Large Quantity Hazardous Materials**

| <b>Hazardous Material</b>  | <b>Relative Toxicity<sup>1</sup> and Hazard Class<sup>2</sup></b> | <b>Permissible Exposure Limit</b>                               | <b>Storage Description (Capacity)</b>        | <b>Storage Practices and Special Handling Precautions</b> |
|--|---|---|--|---|
| Boiler Water Treatment Chemicals - Oxygen Scavenger<br>Proprietary formulation that may include one or more of the following active ingredients:   | Low to moderate toxicity; Hazard class varies by ingredient       | Varies by ingredient  | Plastic totes up to 330 gal, or 55-gal drums | Secondary containment                                     |
| Carbohydrazide<br>CAS 497-18-7   | Moderate toxicity; Irritant                                       | Not listed  |  |   |
| Diethylhydroxylamine<br>CAS 3710-84-7  | Moderate toxicity; Class II Combustible liquid                    | Not established   |  |   |
| Sodium bisulfite<br>CAS 7631-90-5  | Moderate toxicity, no hazard class                                | NIOSH REL 5 mg/m <sup>3</sup> ; OSHA PEL None                   |  |   |
| Sodium metabisulfite<br>CAS 7681-57-4  | Moderate toxicity, no hazard class                                | NIOSH REL 5 mg/m <sup>3</sup> ; OSHA PEL None                   |  |   |
| Sodium sulfite<br>CAS 7757-83-7  | Moderate toxicity, no hazard class                                | ACGIH 5 mg/m <sup>3</sup>                                       |  |   |
| Boiler Water Treatment Chemicals – Neutralizing Amine<br>Proprietary formulation that may include one or more of the following active ingredients: | Low to moderate toxicity; Hazard class varies by ingredient       | Varies by ingredient  | Plastic totes up to 330 gal, or 55-gal drums | Secondary containment                                     |
| Morpholine<br>CAS 110-91-8   | Moderate toxicity; Class I-C Flammable liquid, corrosive          | NIOSH REL 70 mg/m <sup>3</sup><br>OSHA PEL 70 mg/m <sup>3</sup> |  |   |
| Cyclohexamine<br>CAS 108-91-8  | Moderate toxicity; Class I-C Flammable liquid, corrosive          | NIOSH REL 10 mg/m <sup>3</sup><br>OSHA PEL None                 |  |   |
| Diethylaminoethanol<br>CAS 100-37-8  | Moderate toxicity; Class II Combustible liquid                    | NIOSH REL 50 mg/m <sup>3</sup><br>OSHA PEL 50 mg/m <sup>3</sup> |  |   |

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**Summary of Special Handling Precautions for Large Quantity Hazardous Materials**

| <b>Hazardous Material</b>   | <b>Relative Toxicity<sup>1</sup> and Hazard Class<sup>2</sup></b> | <b>Permissible Exposure Limit</b> | <b>Storage Description (Capacity)</b> | <b>Storage Practices and Special Handling Precautions</b> |
|---|---|-----------------------------------|---------------------------------------|---|
| Aminomethylpropanol<br>CAS 124-68-5   | Low toxicity; no hazard class                                     | ACGIH Not Established             |                                       |   |
| Methoxypropylamine<br>CAS 5332-73-0   | Moderate toxicity; Class 1-C<br>Flammable liquid, corrosive       | None listed                       |                                       |   |
| <p>1. Low toxicity is used to describe materials with an NFPA Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2 or 3. High toxicity is used to describe materials with an NFPA rating of 4.</p> <p>2. NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code.</p> |   |                                   |                                       |   |

**Data Request 56:**

Please provide a more detailed description of how a leak of the heat transfer fluid (Therminol VP-1) from the system would be detected. Provide the specifications of any specialized flow, pressure, or leak detection equipment proposed for use.

**Response:**

The VV2 Project heat transfer fluid leak detection approach will incorporate the operating and maintenance experiences and "lessons learned" from the existing SEGS plants (e.g., Kramer Junction). A leak of Therminol would be readily visible as a vapor cloud and will have a detectable odor as well. This detection method is currently being used at the existing SEGS plants and has been their primary source of detection for many years. The VV2 Project will use this approach as well.

In addition to the above detection methods, leaks of heat transfer fluid at the VV2 Project will be detected using flow and/or pressure sensors in the process piping and a level sensor in the fluid reservoir. The specifications of the instrumentation are not fully engineered and, thus, are not available at this time. System details will be provided to the CEC when they are available.